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DERWENT-WEEK: 200157

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TITLE: Fabrication of capacitor of a semiconductor device involves using pentakis ethyl methyl amido tantalum, pentakis dimethyl amido tantalum or pentakis diethyl amido tantalum as a source material for high dielectric tantalum oxynitride layer

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PATENT-FAMILY:

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APPLICATION-DATA:

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ABSTRACTED-PUB-NO: KR2001008502A

BASIC-ABSTRACT:

NOVELTY - A method for manufacturing a capacitor of semiconductor device is provided to repress oxidation generated in an interface of a high dielectric TaON layer and an upper electrode by using PEMAT (Pentakis Ethyl Methyl Amido Tantalum), PDMAT (Pentakis Di Methyl Amido Tantalum) and PDEAT (Pentakis Di

Ethyl Amido Tantalum) as a source material and by nitrifying each layer for high density.

DETAILED DESCRIPTION - A lower electrode (30) is formed through a contact hole on a substrate. A high dielectric TaON layer (32) is deposited on the lower electrode (30) using one of PEMAT, PDEAT or PDMAT as a source which is a metal-organic material. A TaN thin layer is deposited on the TaON layer (32) using the same metal-organic material used above to form an upper electrode (34).

The metal-organic PEMAT, PDEAT or PDMAT is composed of carbons having weak bonding strength in it. So, the source dissolves at a low temperature under 400 deg. C and the deposition is carried out. Before forming a doped polysilicon layer, the upper electrode TaN is deposited, and a plasma processing using N2 and H2 is carried out to densify the thin film and to remove defects simultaneously.

USE - Manufacturing a capacitor of semiconductor device.

ADVANTAGE - Oxidation generated in an interface of a high dielectric TaON layer and an upper electrode is suppressed.

CHOSEN-DRAWING: Dwg.1/10

TITLE-TERMS: FABRICATE CAPACITOR SEMICONDUCTOR DEVICE ETHYL
METHYL AMIDO
TANTALUM AMIDO TANTALUM AMIDO TANTALUM SOURCE
MATERIAL HIGH
DIELECTRIC TANTALUM OXYNITRIDE LAYER

DERWENT-CLASS: L03 U13 U14

CPI-CODES: L04-C11C; L04-C12; L04-C14A;

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